



Review of costs of High-Tech Imaging services

ACC

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Dear

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Review of costs of High-Tech Imaging services

We are delighted to deliver this final report on the costs of High-Tech Imaging services. We trust that this is a useful contribution in thinking about pricing the provision of high-tech imaging services and other cost considerations.

We look forward to further discussions.

Kind regards,

Name withheld

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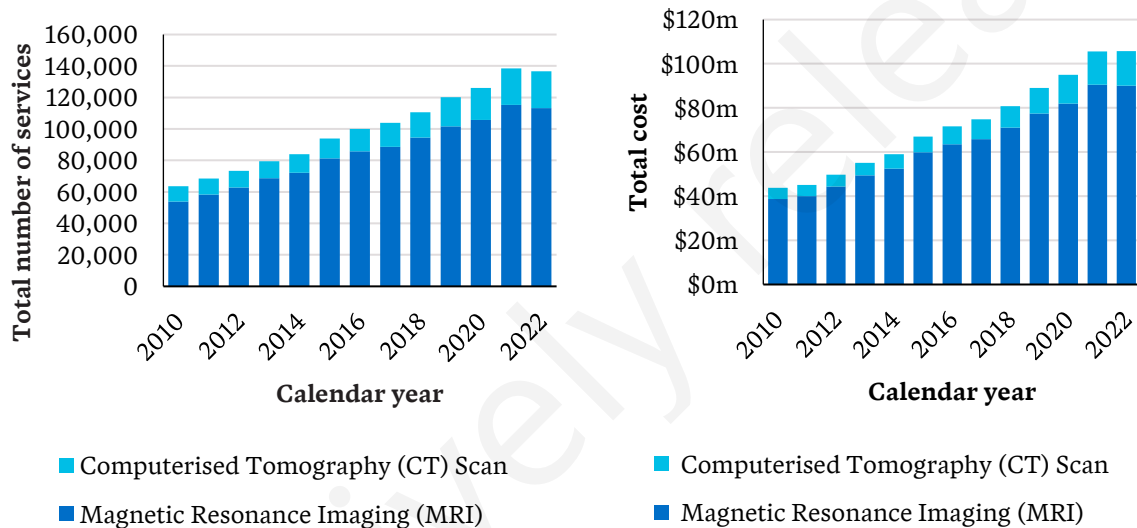
Executive Summary

The Accident Compensation Corporation (ACC) holds contracts with thousands of health care providers throughout New Zealand. For the vast majority of contracts, ACC sets the price it will pay for the various services within the contract. This includes prices for high-tech imaging (HTI), such as Magnetic Resonance Imaging (MRI), Magnetic Resonance (MR) Arthrogram, Computed Tomography (CT) and CT Angiography.

Total HTI costs have been increasing over time, largely driven by the number of services provided. In 2021, a review of ACC's HTI expenditure forecast an overspend on the 2020/21 HTI contract of \$9.5m. This was 17.1% higher than the previous year, comprising 16.5% volume growth and 1.5% price growth. The same review noted that ACC's prices for HTI services were significantly higher than rates paid by Medicare in Australia.

Figure 1 shows the cost of MRI and CT scans paid for by ACC over the past twelve years.

Figure 1 – Total cost (left) and number (right) of MRI and CT services by year



Note: MRI includes MR Arthrogram and CT includes CT Angiography.

Source: Diagnostic Imaging ACC Claims by modality, AR-3636, Data.govt

In response, Taylor Fry was engaged by ACC to review the costs associated with providing these high-tech imaging (HTI) services, and investigate pricing structures of Australian accident compensation schemes as a point of comparison. We undertook the following:

- **Review of ACC's current pricing framework for HTI services**
- Development of an excel **cost model for exploration of cost variations** and dependencies
- **Consultation with three injury schemes in Australia to understand how they fund HTI services and their prices.** We also discussed considerations, trends and their focus on reducing low-value care to reduce costs.

Current approach to pricing

The ACC currently pays contracted service providers a fixed price per scan. This price varies by modality and body part. The scaling between different modalities and body parts is based on Relative Value Units (RVUs) from 2003. Currently one RVU is priced at \$52.61. There are essentially six different RVU levels. Associated prices as shown in the table below.

Table 1 – RVUs in use for high-tech imaging, and current fees, 2022 (NZD)

Modality	Indicative subgrouping	RVU total	Fee per scan (excl. GST)
MRI	All	15.20	\$799.67
MR Arthrogram	All	20.70	\$1,089.03
CT	Brain, Sinuses or Hips	8.50	\$447.19
CT	Most limbs/joints	9.70	\$510.32
CT	Spine, abdomen, lungs, chest	11.40	\$599.75
CT Angiography	All	18.10	\$952.24

Up until 2022, fees have been increased annually in line with an indexation factor which reflects a combination of indices relating to medical labour costs, labour costs, consumer prices and capital costs. This has ranged from around 0.5% to 1.8%, averaging about 1.0% per year over the last 10 years¹. In 2021, ACC implemented a price freeze in response to rising costs of HTI imaging, driven by growing demand for imaging services claimed under the scheme. The indexation rate is comparable with Medicare Australia's long-term indexation rates. We note that historically Medicare Australia has brought in extensive price freezes to control costs, as ACC has done recently.

How other injury schemes in Australian jurisdictions fund HTI services and their prices

We consulted with three injury schemes in Australia (Queensland WorkCover, Transport Accident Commission and icare) to understand their approach to pricing HTI. We found that all schemes consulted used a simple fee (or maximum fee) for service funding model. These were almost all based on Medicare fees with an additional loading which ranged from 1.2× to 1.8×. Generally, these loadings have been fixed over time. Schemes do not have a direct view on practical costs of imaging services, therefore these loadings had been set on consideration of:

- Fairness to both providers and schemes
- Ensuring access to timely and quality services.

Additionally, both the Insurance Commission of Western Australia (ICWA) and the Motor Accidents Insurance Board (MAIB) in Tasmania state they pay on a fee for service basis. The maximum fee being the AMA published rates. We do not have access to these rates, but understand they are higher than Medicare.

While the categories used by ACC and Medicare Benefits Schedule (MBS) codes do not perfectly align, we can approximately compare prices paid (where public) by schemes and ACC. Table 9 below shows the cross jurisdictional comparison for some common HTI services².

¹ This is based on the change in average payment per MRI. MRI are essentially all the same price so at an aggregate level this gives an implied indexation. A time series of indexation factors applied was not readily available.

² In this table, the NSW SIRA rates are provided as gazetted rates.

Table 2 – Comparison of fees for service for common HTI (\$NZD)

Type	MBS Item	Area	Medicare Fee	TAC Victoria	WorkSafe Victoria	NSW icare	NSW SIRA	Queensland WorkCover	ACC
CT	56001	Brain	215	288	322	387	(1)	424	460
CT	56107	Neck	375	502	541	675	(1)	738	515
CT	56107	Spine	360	482	520	648	(1)	708	600
MRI	63010	Head	362	433	500	651	742	712	800
MRI	63154	Spine	386	462	534	695	742	760	800
MRI	63325	Shoulder	434	519	600	742	742	760	800
MRI	63560	Knee	434	519	657	742	742	435	800

Note: Australian prices have been converted to NZD using a conversion factor of 1.06

(1) These are based on AMA rates which are not publicly available.

The fees paid by ACC are generally slightly higher (~\$50-150 more per scan) than the Australian schemes surveyed, and at face value the Medicare fee is roughly half that of ACC fee. However, in drawing the comparison to Medicare fees, it is important to note that it is commonly argued in Australia that increases in costs providing services in Australia have far outstripped the indexation (which has largely been zero) of Medicare fees and this has resulted in larger ‘gaps’ (the difference between the fee charged by the practitioner and the Medicare reimbursement – the patient pays this gap). In 2017/18 the average gap was \$182 AUD for MRI and \$152 AUD for CT, gaps have likely increased since then.

Our understanding is that under all the Australian schemes in Table 2 except NSW icare, providers are able to charge fees above the prices paid by the Scheme, with the patients generally responsible for the difference. The extent to which this occurs varies. The TAC in Victoria acknowledge that it is common for the fees charged by providers to be higher than the price paid by TAC. In this instance the TAC has a mechanism for covering the gap paid by the claimant.

Options for managing costs of HTI services

For most schemes HTI pricing was not a particular focus or concern, largely because the specific nature of each scheme meant that HTI forms a smaller share of their overall costs. Rather, the schemes consulted expressed concerns about potential overuse of imaging and ‘self-referring’. Low-value care, particularly lower back, was the biggest focus as a cost driver.

Two of the schemes consulted have significant initiatives underway to reduce costs associated with low-value care. While both have the same goal, they have approached this from different directions:

- The Transport Accident Commission (TAC) in Victoria has built initiatives to support recommended care pathways in areas where research has identified low-value care commonly occurs.
- Queensland WorkCover have invested in developing an analytics function to enable them to identify patterns, and then seek evidence of this being of high or low value. Critically they have set up pathways to effect change in clinical practice based on the information.

Other regulatory bodies such as the NSW State Insurance Regulatory Authority have also significant work programs into transitioning from volume-based care to value-based care. This includes commissioning research into low-value care and creating indicators to monitor prevalence.

Key results and recommendations

1. While we have found that the fees paid by ACC are generally higher than those of the Australian schemes, in some cases they are quite close. With indexation of Medicare fees that most schemes peg

their rates to recently restarting, and a pause in indexation of ACC's fees, the gap will reduce over time.

2. The RVU's used by ACC provide limited differentiation in pricing within each modality. We recommend adopting better differentiation which will improve the relationship between cost of service and the price paid.
3. The cost increases for high-tech imaging services over the last twelve years have been driven by large increases in service volumes. We recommend a program of work to:
 - a. Investigate changing patterns in imaging referrals
 - b. Benchmark referrers and providers to identify anomalous referring patterns, imaging double-up, or self-referring
 - c. Ensure accepted quality care recommendations are followed and high-quality, usable images are produced
 - d. Identify low-value imaging and work with health care quality monitoring agencies and medical and imaging provider peak bodies to provide education to reduce low-value care.

1 Introduction

1.1 Background

The Accident Compensation Corporation (ACC) holds contracts with thousands of health care providers throughout New Zealand. For the vast majority of contracts, ACC sets the price it will pay for the various services within the contract.

Total HTI costs have been increasing over time, largely driven by the number of services provided. In 2021, a review of ACC's HTI expenditure forecast an overspend on the 2020/21 HTI contract of \$9.5m (\$111.8m vs \$102.3m, or 9.3% higher than expected). This was 17.1% higher than the previous year, comprising 16.5% volume growth and 1.5% price growth. Further, the report commented that the price paid by ACC for imaging was high by international standards, up to 150% to 200% of the price paid by Australia's Medicare system.

Following the review, ACC implemented a freeze on the prices paid to HTI providers and undertook further analysis of the basis for pricing imaging services. This report is a one component of this program of work.

Taylor Fry ('We') were engaged by ACC to:

- Review ACC's current pricing model for High-Tech Imaging Services and propose a price formula
- Undertake a jurisdictional comparison of HTI prices and funding models
- Propose alternative funding models for HTI.

The HTI services within scope for this engagement are MRI, MR Arthrogram, CT and CT Angiography.

1.2 Approach

1.2.1 Overview of our approach

The focus of this project is to understand how ACC's contracted prices for HTI compare to prices paid by other injury schemes (notably, Australian injury schemes), and how they compare with the actual costs within the industry of providing imaging services. There were three components to this:

1. Review ACC's current pricing framework for HTI services
2. Develop a model of the cost of providing an HTI service
3. Undertake a jurisdictional comparison of HTI prices and funding models to better understand price considerations and alternative funding models through Medicare and amongst other funders in Australia.

Our approach to the three components is described below.

Review ACC's current pricing framework for HTI services

We reviewed the existing HTI fee for service model paid by ACC, including:

- The Relative Value Unit weights that give the relativities between modalities and body part, according to which HTI prices are determined
- The indexation rates that have been applied over time.

Cost of providing an HTI service

We developed a cost model which allows ACC to explore how costs of providing HTI services might vary in different scenarios. This has been provided in excel workbook called '*MRI_clinic_model.xlsx*'. The model relies on a number of assumptions, and is intended to be used to consider the influence of various drivers

and test different scenarios. To estimate the absolute level of average costs these assumptions should be verified with data and/or consultation with Radiologists and imaging service providers.

Jurisdictional comparison of HTI prices and funding models

To gain a better view of pricing strategies, we consulted with the following Australian schemes:

- WorkCover Queensland
- Transport Accident Commission (TAC) in Victoria
- icare in NSW.

Our discussions covered the following aspects of high-tech imaging.

Key considerations in funding models	General trends in costs
▪ An overview of their funding model(s) used for high-tech imaging ▪ Approach to forming relativities between different modalities and parts of the body ▪ Consideration of Medicare fees ▪ Any comparison of prices paid versus a view of costs to the providers	▪ Any general trends in observed costs ▪ Approach to updating the price paid for high-tech imaging ▪ Other considerations.

This provided insight into the typical funding approaches and fee levels amongst injury schemes in Australia. It also highlighted the challenges on forming a view of costs of HTI services for injury schemes.

Table 3 lists consultation participants from each scheme. We are grateful to them for sharing their insights.

Table 3 – Consultation participants

Scheme	Participants
WorkCover Queensland	▪ Name withheld Specialist Lead Medical
Transport Accident Commission	▪ Name withheld Senior Manager, Actuarial Services ▪ Name withheld Provider Specialist, Strategy, Sectors & Research Division, Partnerships and Performance Branch ▪ Name withheld Clinical Panel ▪ Name withheld Senior Manager Value Based Health Care ▪ Name withheld Senior Project Lead
icare	▪ Name withheld Chief Medical Officer ▪ Name withheld Senior Actuary

1.2.2 Structure of this report

The remaining sections of this report summarise our findings, structured as:

- *Section 2 High-tech Imaging Costs* – Overview of ACC HTI costs and trends
- *Section 3 Current approach to pricing* – Review of ACC's current approach

- *Section 4 Approach to high-tech imaging pricing by other jurisdictions* – Insight from consultation and comparison of fees paid
- *Section 5 Approach to reducing high-tech imaging costs in other jurisdictions* – Insight from consultation on reducing costs associated with low-value care
- *Section 6 Key findings* – Summarises our key findings from this report.

1.3 Reliances and limitations

This project initially planned to focus on understanding how ACC's contracted prices for HTI compare with the actual costs of providing imaging services, and to identify potential alternative funding models for HTI. It was initially hoped that information on the costs of providing services could be provided by a public or private service provider. Using this costs information we planned to:

- Review the existing models and assumptions, including a comparison of the assumptions to external data sources such as District Health Board data to assess the reasonableness of the composition and calculation of the model components, such as overheads, margins and any multipliers and indexation.
- Develop an independent model of the price using District Health Board and/or any other available data, as a comparison model.

Sourcing data on costs was explored by ACC through a number of avenues and found to be not feasible. Therefore, we:

- Reviewed the existing HTI fee for service model but were not able to provide a comparison to costs. Instead, we focused on comparing the prices paid to those paid by injury schemes in Australia.
- Developed a cost model which allows ACC to explore how costs might vary in different scenarios. This has been provided in excel workbook called '*MRI_clinic_model.xlsx*'. The model relies on a number of assumptions, and it is intended to be used as an exploration tool to consider the influence of various drivers and test different scenarios. To estimate the absolute level of average costs or input into pricing decisions these assumptions should be verified with data and/or consultation with radiologists.

In reviewing the existing HTI fee for service model we developed our understanding of the current approach based on documents provided by ACC, including previous reviews. We have relied on the correctness of the information provided, and have not verified these figures independently. We note, as have previous reviewers, some aspects of the historical documentation are not complete.

Without information on actual costs of providing services, we were unable to fully verify the appropriateness of the current:

- Relative Value Units (RVUs) used to scale between different modalities and body parts
- Conversion factor which sets the overall average price per scan
- Indexation relative to growth in costs.

Instead, we relied on cross-jurisdictional comparisons to Australian injury schemes and Medicare. In doing so we relied on insights from consultations with schemes and publicly available information.

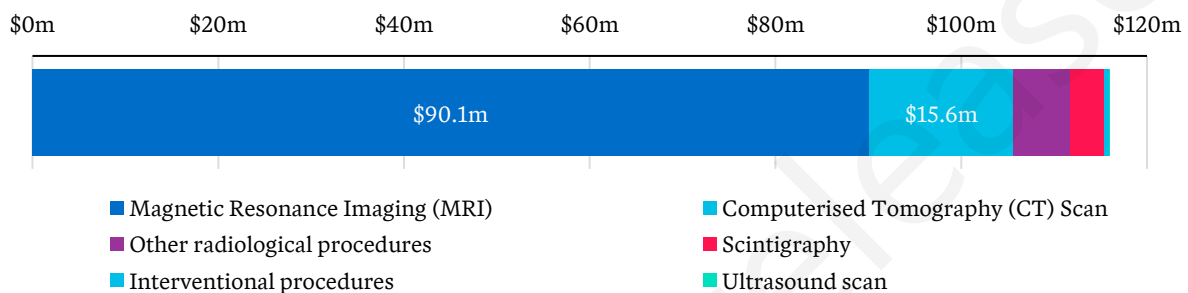
We believe injury schemes in Australia provide a reasonable comparison point. However, there are differences we have not accounted for. Primarily, all comparisons are to Australian schemes. Costs in New Zealand may be different, and ACC provides much broader coverage than any scheme in Australia and makes up a far larger portion of the market for HTI. In addition, there are differences in the coding of different scans. Our mapping between Medicare Benefit Scheme item codes and ACCs scan categories is therefore approximate.

2 High-tech Imaging Costs

To provide context for the review of pricing and costs we have summarised total high-tech imaging costs and time trends. We also highlight the contribution of each modality and most common scans carried out to total costs. This shows the key areas where changes in pricing and/or costs would likely significantly impact total costs.

Over the calendar year 2022, ACC's total high-tech imaging (HTI) costs were \$115.9m. Figure 2 shows the breakdown of this total by imaging type. The majority of costs relate to MRI including MR Arthrogram (\$90.1m, 78%) and CT including CT Angiography (\$15.6m, 13%).

Figure 2 – Total high-tech imaging cost over calendar year 2022 by imaging type



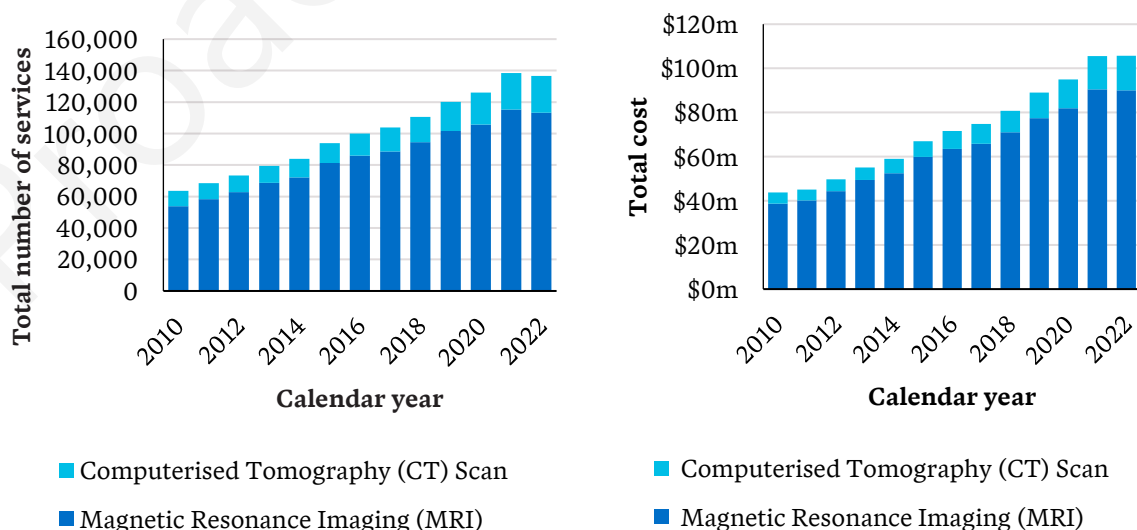
Source: Diagnostic Imaging ACC Claims by modality, AR-3636, Data.govt

This total cost of \$115.9m over calendar year 2022 related to 158,000 services. The distribution of services is similar to that of total costs with MRI including MR Arthrogram making up 72% and CT including CT Angiography 15%.

Figure 3 shows the cost of MRI and CT scans paid for by ACC over the past twelve years:

- In 2010 total MRI and CT costs were \$43.8m, compared to the 2022 total of 2.4 times that, at \$105.7m, an average increase of 7.6% per year.
- This has largely been driven by volume of services. In 2010 the total volume of MRI and CT services was 63,600, which grew to 2.3 times that, or 136,000 in 2022, an average increase of 6.6% per year. This volume-driven growth can be compared to ACC's average annual indexation rate of 1%.

Figure 3 – Total cost (left) and number (right) of MRI and CT services by year



Note: MRI includes MR Arthrogram and CT includes CT Angiography.

Source: Diagnostic Imaging ACC Claims by modality, AR-3636, Data.govt

Table 4 shows the total volume of scans and costs by modality for the 2022 calendar year with MR Arthrogram and CT Angiogram split out from MRI and CT.

Table 4 – Number of scans and cost by modality, 2022 calendar year

Modality	Number of scans	% of scans	Total cost, \$m	% of HTI cost
MRI	109,140	79.9%	\$85.71	81.1%
MR Arthrogram	4,059	3.0%	\$4.38	4.1%
CT	23,284	17.0%	\$15.46	14.6%
CT Angiogram	121	0.1%	\$0.11	0.1%
Total	136,604		\$105.66	

Source: Diagnostic Imaging ACC Claims by modality, AR-3636, Data.govt

Table 5 provides a further breakdown of costs of MRI imaging:

- The costs are the same for the different areas so scales with volume
- Knee, Lumbar Spine and Shoulder MRIs make up three-fifths of MRI imaging volume. Other body areas are less common.

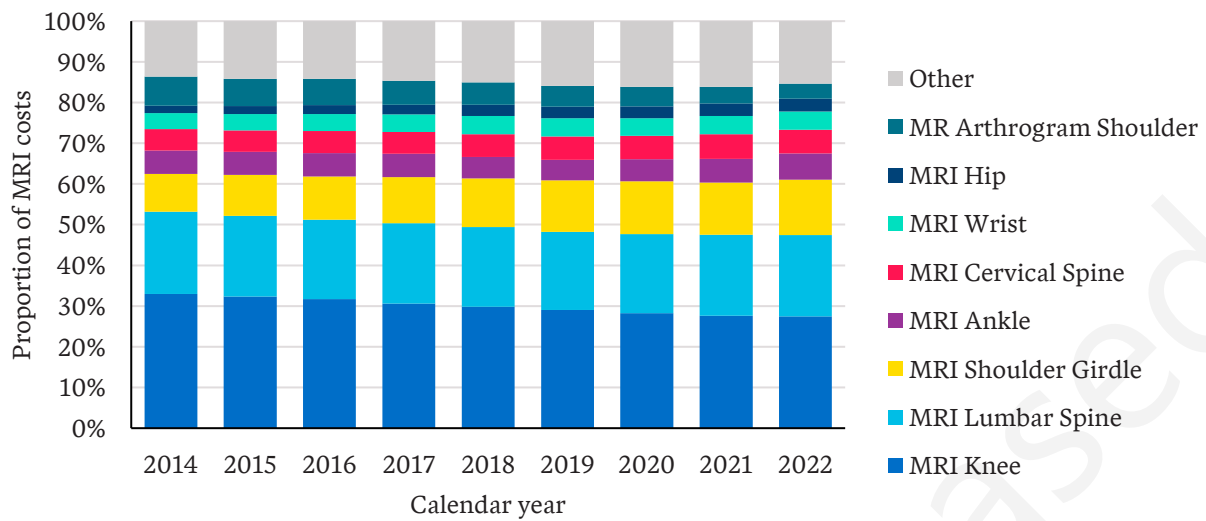
Table 5 – Eight most common MRI scans and cost by area, 2022 calendar year

Description	Volume	% of MRI volume	Cost, \$m	% of MRI cost
MRI Knee	31,053	27%	\$24.73	28%
MRI Lumbar Spine	22,773	20%	\$18.00	20%
MRI Shoulder Girdle	15,504	14%	\$12.27	14%
MRI Ankle	7,382	7%	\$5.85	7%
MRI Cervical Spine	6,663	6%	\$5.21	6%
MRI Wrist	5,112	5%	\$4.02	4%
MRI Hip	3,735	3%	\$2.87	3%
MR Arthrogram Shoulder	3,049	3%	\$3.31	4%
Other	17,928	16%	\$13.84	15%

Source: Diagnostic Imaging ACC Claims by modality, AR-3636, Data.govt

The most common scan types have remained consistent over time. However, the increase in the number of scans has been larger for MRI of the shoulder girdle, hip and cervical spine, and smaller for MRI of the knee. Figure 4 shows the proportion of MRI costs by scan over time – the growth in volume has occurred across all areas so the distribution has largely remained stable.

Figure 4 – Proportion of MRI costs by scan over time



Source: Diagnostic Imaging ACC Claims by modality, AR-3636, Data.govt

Table 6 provides a similar breakdown of costs of CT imaging:

- The volume and costs are more widely distributed than for MRI
- Guided Injection/Aspiration makes up over a quarter of volume, but over two thirds of total cost.
- Shoulder, wrist ankle and foot CTs make up just over a quarter of CT imaging volume.

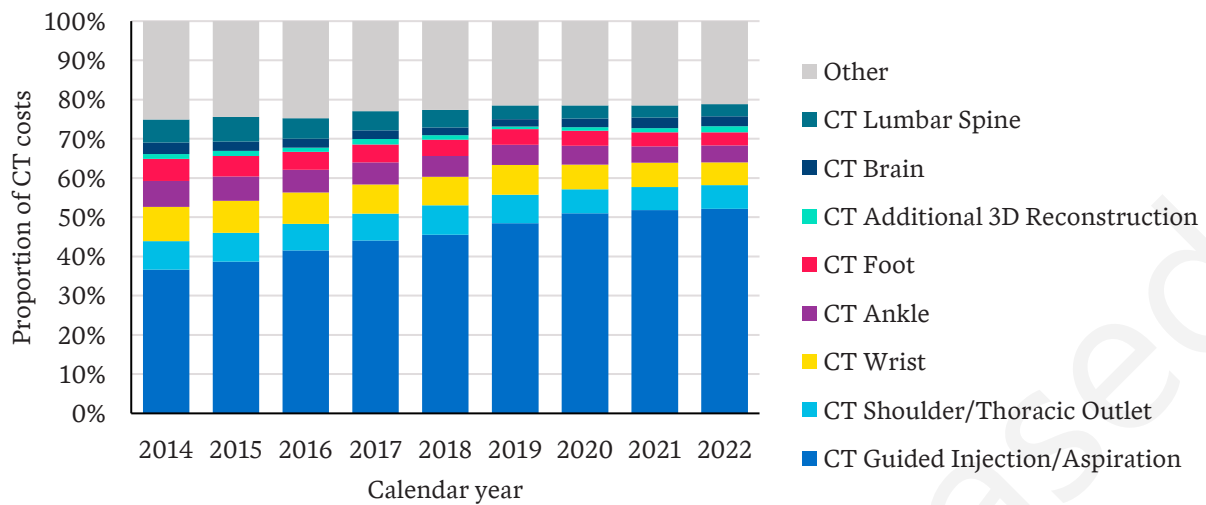
Table 6 – Eight most common CT scans and cost by area, 2022 calendar year

Description	Volume	% of CT volume	Cost, \$m	% of CT cost
CT Guided Injection/Aspiration	8,621	37%	15.59	68%
CT Shoulder/Thoracic Outlet	1,853	8%	0.94	4%
CT Wrist	1,780	8%	0.90	4%
CT Ankle	1,339	6%	0.68	3%
CT Foot	1,030	4%	0.52	2%
CT Additional 3D Reconstruction	968	4%	0.24	1%
CT Brain	898	4%	0.39	2%
CT Lumbar Spine	838	4%	0.49	2%
Other	6,078	26%	3.29	14%

Source: Diagnostic Imaging ACC Claims by modality, AR-3636, Data.govt

The most common scans have remained consistent over time. However, the increase in the number of Guided Injection/Aspiration, Shoulder, Additional 3D reconstruction and Brain scans has been larger. The increase in the number of scans of the wrist, ankle and foot has been smaller. Figure 5 shows the proportion of CT costs by scan over time which clearly shows this growth in Guided Injection/Aspiration.

Figure 5 – Proportion of CT costs by scan over time



Source: Diagnostic Imaging ACC Claims by modality, AR-3636, Data.govt

Our finding:

Volumes and associated costs of high-tech imaging have more than doubled over the past twelve years. Over calendar year 2022:

- MRI represented 81.1% of costs, with almost two-thirds of this relating to imaging of knees, lumbar spine and shoulder. Focusing on fair pricing for these components may offer the most benefits.
- MR Arthrogram are relatively uncommon (3.0% of HTI volume). This is most commonly used to image the shoulder.
- CT represents 14.6% of costs, with a wider distribution across body parts than MRI.

Volumes have increased across all types MRI and CT scans. For MRI there have been slightly larger increases for shoulder girdle and hip. For CT, the increases in Guided Injection/Aspiration, Shoulder, Additional 3D reconstruction and Brain scans are relatively larger.

3 Current approach to pricing

3.1 Our understanding of the current approach

ACC currently pays contracted service providers a fixed price per scan. This price varies by modality and body part. The approach was recently reviewed in the 2022 Deloitte Report, ACC High-Tech Imaging Pricing Methodology Review.

We understand the methodology for the current price was developed in 2009 and consists of:

- Using Relative Value Units (RVUs) from the 2003 Royal Australian and New Zealand College of Radiologists (RANZCR) relative value unit workload model, to give scaling between different modalities and body parts.
- Applying an assumed cost per relative value unit, or conversion factor, to the total RVUs for scans. This conversion factor was re-set in 2009 at \$46.07.
- Annual updates of the conversion factor to allow for inflation, the indexation has ranged from around 0.5% to 1.8% over the ten years to 2022, averaging 1.0% per year.
- A price freeze, which was applied in June 2021 with a conversion factor of \$52.61.
- Temporary additional increases during the COVID-19 pandemic to allow for higher costs related to cleaning and social distancing.

To provide a high-level view, the most common high-tech imaging procedures and the current fee per service are shown in table below.

Table 7 – Top five most common high-tech imaging services and average cost per scan, calendar year 2022

Modality	Service description	Total claims	Fee per scan, excl GST
Magnetic Resonance Imaging	MRI Knee	31,053	\$799.67
Magnetic Resonance Imaging	MRI Lumbar Spine	22,773	\$799.67
Magnetic Resonance Imaging	MRI Shoulder Girdle	15,504	\$799.67
Computerised Tomography Scan	CT Guided Injection/Aspiration	8,188	\$952.24
Magnetic Resonance Imaging	MRI Ankle	7,382	\$799.67

Source: Diagnostic Imaging ACC Claims by modality, AR-3636, Data.govt and ACC provided schedule of fees

The two key components of this approach are:

- RVUs – these were developed in 2003 by the Royal Australian and New Zealand College of Radiologists for measuring radiologist reporting workloads in teaching hospital departments and were adopted by ACC in 2009.
- Conversion factor and indexation – The single conversion factor drives the average price per scan across all imaging.

We discuss these in turn below.

3.1.1 Relative Value Units

Relative Value Units (RVUs) are a resource-based measurement of value of services provided. The scale is relative (giving the value of one service compared to another) so a conversion factor is needed to convert RVUs into dollar amounts for payments. The United States Medicare system relies on RVUs to pay for

services. In the United States the RVUs consist of three components – physician work, practice expense and malpractice expense.

The RVUs used by ACC are similar in nature but distinct to those used in the United States. Our understanding is the RVUs were developed in Australia to measure radiologist workloads in teaching hospitals. The RVUs consist of five components: labour, equipment, consumables, overheads and facilities. The components are added to give the total RVU for a particular procedure.

RVUs are not perfect:

- Some criticisms noted in 2009 include³:
 - Use of historical RVUs means some newer more complex MRI/CT studies will not be properly accounted for
 - They do not capture all of work in providing imaging – for example communication, preparation, audit, safety and supervising junior staff are not included.
- Additionally, the relative proportion of the total RVU varies by procedure. For example, the labour component varies from 18% of total RVU to 55% and the equipment component varies from 19% to 70%⁴. A single inflation factor has been applied for the past 10 years. If the inflation of costs to the RVU components have varied significantly, this may mean the RVUs do not provide a good picture of current cost relativities.

RVUs used by ACC in high-tech imaging

While there are limitations to the RVUs, they are not heavily relied upon in the current pricing approach. They are used to set relativities between modalities, but there is little differentiation within a modality. There are essentially six levels:

- One for an MRI – for all body parts
- One for an MR Arthrogram
- Three values for CT (plus another two for CT with fluoroscopy)
- One value for CT Angiography.

The table below shows the RVUs for these procedures.

³ The Royal Australian and New Zealand College of Radiologists (RANZCR) relative value unit workload model, its limitations and the evolution to a safety, quality and performance framework. Journal of Medical Imaging and Radiation Oncology 53 (2009) 450–458

⁴ This is based on the breakdown of 2001 RVUs, we do not have the breakdown into components for 2003, but expect it would be similar.

Table 8 – RVUs in use for high-tech imaging

Modality	Indicative subgrouping	RVU
MRI	All	15.20
MR Arthrogram	All	20.70
CT	Brain, Sinuses or Hips	8.50
CT	Most limbs/joints	9.70
CT	Spine, abdomen, lungs, chest	11.40
CT Angiography	All	18.10

The Medicare Benefits Scheme (MBS) in Australia provides a useful comparison point. A complete reconciliation and comparison between the two coding systems is beyond the scope of this work. However, we make the following observations:

- The MBS provides more granularity for MRIs. However, in general the variation is fairly modest (~20%). For example, the MBS relativities for MRIs of knee to spine is about 1.12 and head to spine is about 0.94. There are a small number of scans (e.g. pelvis MRI scans relating to pregnancy) which attract very high fees.
- The MBS also provides more granularity for CTs, but CTs of limbs/joints do not appear in the MBS. In general the variation is fairly small, for example, the MBS relativities for CTs of neck to the spine is 1.04.

Additionally, there are some providers which publish fees online which show small variations. For example, River Radiology lists the standard fee for a knee MRI as \$1,000, single region of the lumbar spine as \$1,100 and a shoulder MRI as \$1,200⁵. Other providers note the duration may differ which likely implies some cost difference. For example Pacific Radiology notes ‘Your [MRI] scan will take on average 30 minutes, but may take between 10 minutes and two hours depending on what images are needed.’⁶

Our finding:

There are limitations to the RVUs as they do not reflect all components of work involved in imaging services. Further, as the RVUs are now twenty years old, the costs associated with different components may have evolved differently over this time decreasing the accuracy of the relativities.

Additionally, they provide little differentiation within a modality. Other jurisdictions, notably Medicare, schemes that base their fees on Medicare, and some private imaging providers, utilise greater differentiation in fees and prices.

3.1.2 Conversion factor and indexation

The total RVUs for any scan are converted into a price by applying the conversion factor. This is fixed across all scan types and drives the average price per scan. The conversion factor was rebased in 2009 to \$46.07. It was subsequently indexed annually until the recent price freeze was applied in 2021, at a value of \$52.61. There is limited information available as to how the conversion factor was set in 2009. This combined with the lack of information on the actual costs of providing services means it is difficult to verify the appropriateness of the absolute level. We have therefore focused on comparing the resulting prices to those paid by Australian injury schemes in different jurisdictions, this is covered in *Section 4.3 – Fee comparison*.

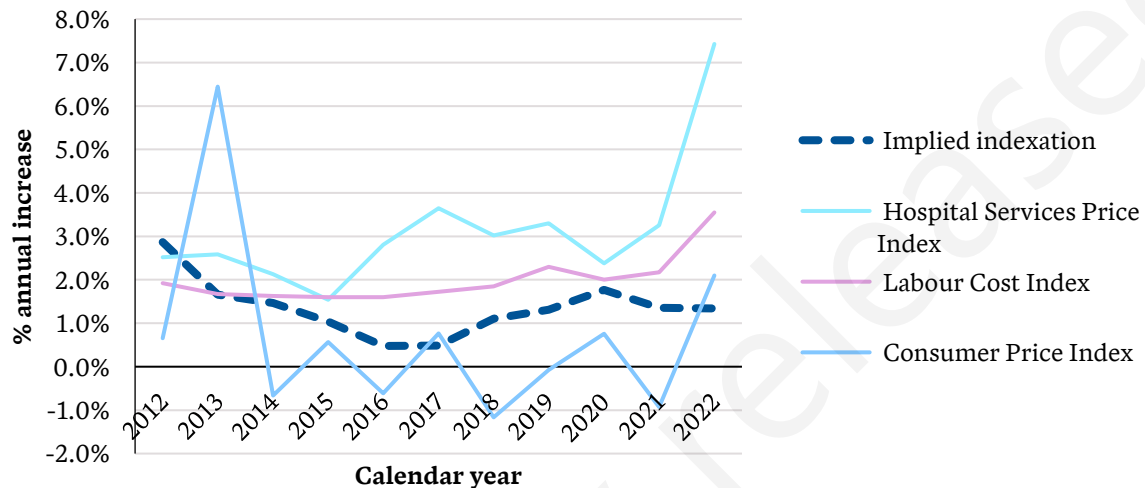
⁵ For example, <https://riverradiology.co.nz/diagnostic-solutions/price-list/>),

⁶ For example, <https://pacificradiology.com/services/mri>

Given the conversion factor set in 2009, one key consideration is whether the inflation applied to the price per scan has reflected changes in underlying costs, and therefore whether current prices reflect costs.

The indexation ACC uses in HTI fees is abased on a combination of indices (Medical Specialist Labour Cost Index (44%), Labour Cost Index (11%), Consumer Price Index (20%) and Capital Cost Index (25%). Over the past ten years the indexation has averaged about 1.0% per year, ranging from 0.5% to 1.8%. Figure 6 compares the implied indexation (from the claims data⁷) and three relevant indices. From Figure 6 the indexation rate has generally been above the Consumer Price Index but below the Labour Cost Index and Hospital Price Index.

Figure 6 – Implied ACC indexation of HTI and selected relevant indices



Source: Stats NZ Indices and Diagnostic Imaging ACC Claims by modality, AR-3636, Data.govt. Implied indexation has been derived from claim costs.

As shown in Figure 6 there has been significant variation in the inflation of the underlying components of the HTI indexation. One risk with the single conversion factor being applied to different modalities and scans is that if there are large differences in the relative size of cost components this could have created pockets of relative over or under pricing⁸. The RVUs for each scan provide an indication of the breakdown of costs associated with imaging into components which would vary with the different indices. For CT and MRI scans the relative breakdown of total RVUs per scan into the components are very similar across modalities and scans. While we cannot be definitive without data on actual costs, this suggests the approach of a single indexed conversion factor is likely appropriate and unlikely to have created pockets of under or over pricing.

While there is little visibility of how actual costs have increased, the MBS in Australia provides a comparison point. Medicare fees are typically subject to annual indexation, although this was frozen over the period July 2013 to June 2017. From 1995 to 2022 the annual indexation averaged 1.1%, which was less than consumer price index and average weekly earnings increases⁹. Following the freeze, from July 2017 indexation was reintroduced in phases. Some diagnostic imaging services were indexed from July 2020,

⁷ This is based on the change in average payment per MRI. MRI are essentially all the same price so at an aggregate level this gives an implied indexation. A time series of the indexation factors applied was not readily available.

⁸ If there was a large variation in the relative size of components of costs between different scans some scans could potentially now be relatively over and under priced. As an extreme example, say a particular scan is 100% costs which increase aligned with the HSPI and another is 100% costs which increase with the CPI. Cost increases for the first scan would have exceeded the indexation and it would be relatively under priced. Cost increases for the second scan would have been below the indexation and it would be over priced.

⁹ Australian Medical Association, Why Medicare indexation matters, 2022 <https://www.ama.com.au/articles/why-medicare-indexation-matters>

however indexation has only recently be reintroduced for MRIs (from July 2022). This means Medicare fees for HTI have essentially been fixed over the past ten years. In recognition that there is now a large gap and in response to Strengthening Medicare Taskforce¹⁰ report the Australian government has committed \$5.7 billion dollars to the Strengthening Medicare package in the 2023-24 Budget. This includes applying an indexation factor of 3.6% from July 2023, and potentially another increase in November.¹¹

It should be noted that it is widely argued that increases in costs providing services in Australia have far outstripped the indexation of Medicare fees and this has resulted in larger 'gaps' (the difference between the fee charged by the practioner and the Medicare reimbursement – the paitient pays this gap).¹²

Our finding

Overall, ACC's indexation rates appear appropriate, although we cannot be definitive without a view on costs. The indexation is comparable with Medicare Australia's long-term indexation rates. We note that historically Medicare Australia has brought in extensive price freezes to control costs, as ACC has done recently.

¹⁰ <https://www.health.gov.au/committees-and-groups/strengthening-medicare-taskforce>

¹¹ [https://www.aph.gov.au/About_Parliament/Parliamentary_departments/Parliamentary_Library/Budget/reviews/2023-24/Medicare#:~:text=From%201%20July%202023%2C%20the%20being%20applied%20to%20most%20items\).](https://www.aph.gov.au/About_Parliament/Parliamentary_departments/Parliamentary_Library/Budget/reviews/2023-24/Medicare#:~:text=From%201%20July%202023%2C%20the%20being%20applied%20to%20most%20items).)

¹² For example see the following:

- <https://www.health.gov.au/sites/default/files/documents/2020/12/medicare-benefits-schedule-review-taskforce-final-report-an-mbs-for-the-21st-century-recommendations-learnings-and-ideas-for-the-future.pdf>
- <https://www.ama.com.au/sites/default/files/2022-11/AMA%27s-plan-to-Modernise-Medicare-Why-Medicare-indexation-matters.pdf>
- <https://theconversation.com/what-is-the-medicare-rebate-freeze-and-what-does-it-mean-for-you-114169>
- <https://www.adia.asn.au/does-the-government-deserve-your-trust-on-medicare/>

4 Approach to high-tech imaging pricing by other jurisdictions

In Australia there are numerous injury schemes who also pay contracted providers for high-tech imaging services. We met with three representative schemes, covering a range of injury types, to gain an understanding of their funding models and key considerations:

- Queensland WorkCover
- NSW icare
- Victoria Transport Accident Commission (TAC).

In addition we have included relevant publicly available information from WorkSafe Victoria and NSW State Insurance Regulatory Authority (SIRA).

Our discussions covered key considerations in funding models for high-tech imaging and general trends in costs for high-tech imaging. The relative imaging prices paid by various funders can provide a starting point for a discussion of the New Zealand prices, but there are a number of additional considerations to keep in mind:

- Differences such as market size, volume of services and potentially underlying costs (for example, rent)
- Market position of funders – the proportion of all services funded by ACC is higher than in Australia given the broader scope of ACC's injury scheme.

All of the schemes that we have consulted base their pricing structure on Medicare fees, plus a loading. Therefore, we first discuss the pricing approach taken by Medicare, and then summarise fees and pricing structures of the Australian schemes.

4.1 Medicare pricing for high-tech imaging

Medicare is Australia's national health insurance scheme which subsidises the cost of many medical and allied health services. Medicare operates by paying a specified benefit (in the form of a rebate) for a health or medical service for which a claim is submitted. Only services provided by private practitioners (the majority of Australian doctors work in private practice) are covered by Medicare. Services provided in a public hospital only attract a Medicare benefit if the patient elects to be treated as a private patient.

Services covered by Medicare benefits are mandated in specified tables, published as the Medicare Benefits Schedule (MBS). Most items listed in the MBS are remunerated on a fee for service basis. The level of Medicare benefit is calculated as a percentage of a mandated schedule fee for the service and varies on the setting.

4.1.1 Medicare granularity

The MBS offers a lot of granularity in coding. There are approximately 50 different codes for MRI and another 50 for CT.

For MRI the fees for most codes are within +/- 10% of each other, with one-third of codes being the same price. There are a small number of codes which relate to pelvis or abdomen scans for a patient who is pregnant. The fees for these scans are 3-4 times the fees for other MRI scans.

For CT the variation is larger than for MRI, however close to half the scans are still within +/- 20% of each other.

4.1.2 Updates to Medicare prices

The MBS is updated regularly to reflect changes to the scope of services due to changes in clinical practice, the addition of new services or the deletion of obsolete services, as well as to allow for the regular adjustment of fees.

Applications can be made to the department by the medical profession, medical industry and others with an interest in seeking Australian Government funding for a new medical service or change to an existing service.

An application for a new service is made to the Medical Services Advisory Committee (MSAC). The fee for an MBS item is proposed and justified in an application to MSAC, and forms the basis of costs included in both the economic evaluation and the budget analysis. If MSAC advises that it supports a proposed service, the application will proceed to the implementation stage, during which the Department of Health and Aged care consults with stakeholders to finalise the MBS item fee. If the final fee greatly differs to the proposed fee considered and advised by MSAC; the Department of Health and Aged care reserves the right to redirect this back to MSAC for further consideration.

4.1.3 Medicare fee coverage and gap fees

There is a common perception in Australia that MBS fees do not always cover costs. Providers often charge above the MBS fees, with consumers paying the 'gap'. Data on fees, gaps and use are not readily available. However, in 2017/18¹³:

- Just under 80% of diagnostic imaging was billed at the relevant MBS fees. The proportion of HTI billed at the MBS rate would be lower.
- The average gap fee in addition to the MBS rebate for an MRI was \$182 AUD and for a CT it was \$152 AUD.

Further since 2017/18 the proportion of imaging services billed at the MBS rate has likely decreased, and the gap payments increased as MBS fees have largely been frozen. We show a comparison of fees for a selection of scan types in Table 9.

4.2 Approaches by other injury schemes

We met with the following schemes:

- Queensland WorkCover
- NSW icare
- Victoria Transport Accident Commission (TAC).

In addition, we have included publicly available information on fees from WorkSafe Victoria and NSW State Insurance Regulatory Authority (SIRA).

All these schemes used a simple fee (or maximum fee) for service funding model. These were almost all based on MBS fees with an additional loading. In NSW, icare also allows the use of the maximum fee under the SIRA (State Insurance Regulatory Authority) gazetted rates. These are largely based on the Australian Medical Association (AMA) rates, however MRI is an exception (fixed maximum fee of \$700 AUD for one area).

¹³ Australian Diagnostic Imaging Association, 2019-20 Budget Submission, Safeguarding primary care by making quality radiology more affordable. <https://treasury.gov.au/sites/default/files/2019-03/360985-Australian-Diagnostic-Imaging-Association.pdf>

Additionally, both the Insurance Commission of Western Australia (ICWA) and the Motor Accidents Insurance Board (MAIB) in Tasmania state they pay on a fee for service basis. With the maximum fee being the AMA published rates. We do not have access to these, but they are higher than Medicare.

Generally, the loadings on the Medicare fees used by schemes have been fixed over time. Schemes generally did not attempt to review HTI fees on a regular basis. Rather they would consider them if there was an issue raised.

Some schemes have the ability to enter contracts with higher fees, say in high cost regions, to ensure access to timely services. This had not been used for HTI imaging to date.

For most schemes HTI pricing was not a particular focus or concern. However, WorkCover Queensland did complete a large project to update their MRI pricing around five years ago. They had inherited a single (high) fixed price and wished to update this. The result was to move to a schedule which is approximately 1.8× MBS fees. This introduced granularity to the pricing (for different body parts). At the same time they introduced quality requirements to avoid imaging having to be repeated due to low quality results. They observed challenges in finding and/or accessing data on costs to service providers.

Costs management

While HTI fees were not a focus for most schemes, all the schemes we talked to expressed concerns about potential overuse of imaging and 'self-referring'. Low-value care, particularly lower back, was the biggest focus as a cost driver. An overview of low-value care in high-tech imaging, and possible interventions is attached in *Section 5 – Approach to reducing high-tech imaging costs in other jurisdictions*. While not a part of pricing imaging services, this may be of interest from a claims and cost management perspective.

4.3 Fee comparison

Many schemes, as well as Medicare publish their schedules online. While the categories used by ACC and MBS codes do not perfectly align, we can approximately compare prices. Table 9 below shows the cross jurisdictional comparison for some common HTI processes. The fees shown for Australian schemes and Medicare are published on their relevant websites.

Table 9 – Comparison of fees for service for common HTI (\$NZD)

Type	MBS Item	Area	Medicare Fee	TAC Victoria	WorkSafe Victoria	NSW icare	NSW SIRA	Queensland WorkCover	ACC
CT	56001	Brain	215	288	322	387	(1)	424	460
CT	56107	Neck	375	502	541	675	(1)	738	515
CT	56107	Spine	360	482	520	648	(1)	708	600
MRI	63010	Head	362	433	500	651	742	712	800
MRI	63154	Spine	386	462	534	695	742	760	800
MRI	63325	Shoulder	434	519	600	742	742	760	800
MRI	63560	Knee	434	519	657	742	742	435	800

Note: Australian prices have been converted to NZD using a conversion factor of 1.06

(1) These are based on AMA rates which are not publicly available.

Table 9 shows that ACC fees are generally slightly higher than most schemes, typically the difference is in the range \$50-\$150. However there are some larger differences such as for MRI of the head, where the TAC fee is \$367 less than the ACC equivalent and CT of the Neck where the icare fee is \$160 higher than the ACC equivalent.

The loadings paid by Australian schemes have ranged from 1.2× to 1.8× the MBS fee. Our understanding is that under all the Australian schemes in Table 9 except NSW icare, providers are able to charge fees above the prices paid by the Scheme, with the patients generally responsible for the difference. The extent to which this occurs varies.

While TAC pays at the lowest rate at 1.2 times the Medicare fee, they noted clients may pay a gap above this. TAC claimants are able to make an additional claim to cover the gap, and they would typically pay this. There is little visibility to the extent this occurs.

We note that prior reviews have noted the large discrepancy between the fees paid by Medicare, and those paid by ACC. However, comparing ACCs fees to the Medicare rate is not a fair comparison, as all injury schemes (for which information was publicly available) are paying fees above the Medicare rate with loadings ranging from 1.2× to 1.8×, with those that pay lower rates having an avenue for covering claimants gap fees. In addition, Australians who receive Medicare rebates are known to pay significant additional gap fees out of pocket.

Schemes do not have a direct view on practical costs of scanning, therefore these loadings had been set on consideration of fairness to both providers and schemes, ensuring access to timely and quality services, and market effects.

Our finding

The fee for service model used by ACC is consistent with all schemes we discussed with, as well as all others for which we found publicly available information, although some schemes allow providers to charge less (a maximum fee for service).

We spoke with Queensland WorkCover, Transport Accident Commission and icare who all based their fees on the Medicare schedule, with a loading applied (1.2×-1.8×). This reflects the natural lack of visibility into providers' costs as well as recognises Medicare fees are typically considered to not fully cover costs and patients often incur an additional out-of-pocket payment. Other schemes used AMA rates which are also higher than Medicare.

The fees paid by ACC are slightly higher than most schemes, typically the difference is in the range \$50-\$150.

5 Approach to reducing high-tech imaging costs in other jurisdictions

Many Australian schemes, including Workcover QLD, Victorian Traffic Accident Commission, and NSW icare, are thinking about how to reduce costs associated with low-value care, including concerns about potential overuse of imaging and 'self-referring'.

5.1 Low-value high-tech imaging

Some medical care provides minimal or no value to the patient, or the potential for harms exceeds the potential benefit: this phenomenon has been dubbed 'low-value care'. A more formal definition of low-value care is 'use of an intervention where evidence suggests it confers no or very little benefit to patients, or risk of harm exceeds likely benefit, or, more broadly, the added costs of the intervention do not provide proportional added benefits.'¹⁴

In the field of high-tech imaging, volumes of testing have increased in many jurisdictions, and there is increased concern about low-value care, such as unnecessary imaging and follow-up imaging, and potentially unnecessary follow-up treatments or interventions. Possible issues with low-value care in high-tech imaging include:

- False positives in testing
- Exposure to radiation
- Unnecessary patient anxiety
- Increased risk of unnecessary interventions/treatments from incidental findings.

Increased awareness of low-value care in New Zealand

In New Zealand, there is increasing concern about the prevalence of low-value care. Behavioural factors that have been identified to contribute to low-value care in New Zealand include¹⁵:

- Fear of missing a diagnosis
- Financial incentives
- Methods of teaching for doctors
- Patient expectations
- Lack of time for shared decision making
- Avoidance of challenging conversations
- Fear of a complaint.

Concern about low-value care has led to the launch of the 'Choosing Wisely' campaign in both Australia and New Zealand, involving a number of stakeholders and led by the Council of Medical Colleges. The objective of this campaign is to identify unnecessary interventions and implement measures to reduce them. High-tech imaging falls within this campaign.

A relevant consequence of this is the EVOLVE recommendations, adopted by the Royal Australasian College of Physicians (RACP). It is worth noting that one of the 'top-five' recommendations relates to

¹⁴ Scott, I. A., & Duckett, S. J. (2015). In search of professional consensus in defining and reducing low-value care. *The Medical journal of Australia*, 203(4), 179-181.

¹⁵ <https://www.hqsc.govt.nz/assets/Resource-library/Choosing-Wisely/Publications-resources/Choosing-Wisely-Aotearoa-min.pdf>

high-tech imaging: “do not use imaging for diagnosing non-specific acute low back pain in the absence of red flags.”

Prevalence: non-specific lower back pain scans an issue

There is debate about the prevalence of low-value care. However, several reviews have identified scanning for non-specific low back pain as an issue in high-tech imaging, for a variety of jurisdictions.

An international systematic review¹⁶ of all forms of diagnostic testing identified “substantial overuse of diagnostic testing present with wide variation in overuse.” Although this review dealt with all forms of low-value care it was found that “preoperative testing and imaging for non-specific low back pain are the most frequently identified low-value diagnostic tests.”

In the Australian context, a review of Medicare claims examined prevalence in 2009 administrative data¹⁷ and identified that 12% of Medicare beneficiaries receive low-value back-pain scans: this accounted \$226M of spending in 2009.

There are evidence-based interventions to reduce the use of low-value care

There have been a variety of trials of interventions in several jurisdictions to reduce the use of low-value care, which are summarised in two systematic reviews^{18 19}.

Across 84 randomised and observational studies, the first of these reviews finds the following types of interventions are ‘promising strategies with a solid evidence base’:

- **Clinical decision support:** including integration of information with electronic health records, administrative restrictions on test orders, third party support, promotion of clinical pathways or guidelines through decision support tools such as handheld computer application or decision trees.
- **Performance feedback:** including providing physicians with information on their use of low-value care, offering suggestions for change, achievable benchmarks, and tools for improvement.
- **Multicomponent interventions:** which combined clinician education with decision support and/or performance feedback.

The second review encompassed 131 studies to focus specifically on the effectiveness of interventions motivated by or using recommendations from the Choosing Wisely campaign. The review found that active interventions are more effective at reducing low-value care, compared to simply disseminating Choosing Wisely recommendations. Interventions with multiple components, such as those which combine clinician education with decision support are more successful than those with only one component.

In addition, a recent Australian study²⁰ performed a randomised controlled trial to evaluate an intervention where a customised letter was sent out to high-requesting GPs. The letters graphically displayed recipients’ overall request rate for target imaging tests and compared this with the median rate

¹⁶ Müskens, J. L., Kool, R. B., van Dulmen, S. A., & Westert, G. P. (2022). Overuse of diagnostic testing in healthcare: a systematic review. *BMJ quality & safety*, 31(1), 54-63.

¹⁷ Schwartz, A. L., Landon, B. E., Elshaug, A. G., Chernen, M. E., & McWilliams, J. M. (2014). Measuring low-value care in Medicare. *JAMA internal medicine*, 174(7), 1067-1076.

¹⁸ Colla, C. H., Mainor, A. J., Hargreaves, C., Sequist, T., & Morden, N. (2017). Interventions aimed at reducing use of low-value health services: a systematic review. *Medical Care Research and Review*, 74(5), 507-550.

¹⁹ Cliff, B. Q., Avancena, A. L., Hirth, R. A., & Lee, S. Y. D. (2021). The impact of Choosing Wisely interventions on low-value medical services: a systematic review. *The Milbank Quarterly*, 99(4), 1024-1058.

²⁰ O’Connor, D. A., Glasziou, P., Maher, C. G., McCaffery, K. J., Schram, D., Maguire, B., ... & Buchbinder, R. (2022). Effect of an individualized audit and feedback intervention on rates of musculoskeletal diagnostic imaging requests by Australian general practitioners: a randomized clinical trial. *JAMA*, 328(9), 850-860.

of requests. The letter also described the benefits of tackling imaging overuse and provided links to educational resources. The intervention was found to significantly decrease the overall rate of requests.

5.2 Approaches to managing costs

Two of the schemes we consulted have significant initiatives underway to reduce costs associated with low-value care. While both have the same goal, they have approached from different directions:

- The Transport Accident Commission (TAC) in Victoria has built initiatives to support recommended care pathways in areas where research has identified low-value care commonly occurs.
- Queensland WorkCover have invested in developing an analytics function to enable them to identify patterns, and then seek evidence of this being of high or low value. Critically they have also operationalised their ability to effect change based on the analytics.

Other regulatory bodies such as the NSW State Insurance Regulatory Authority have also commissioned research into low-value care and started creating indicators to monitor prevalence. We have summarised publicly available information on this below.

Transport Accident Commission

The Federal and Victorian State Government have signed up to the goal of eliminating serious trauma by 2050 and halving lives lost by 2030. As part of this long-term goal the TAC have released the TAC 2025 strategy: this strategic framework has three key strategic directions:

- Road safety and prevention
- Value Based Health Care
- Next Generation Claims Model.

The 'Value Based Health Care' direction has identified that the traditional fee-for-service arrangement 'can lead to paying for volume rather than value, which doesn't always guarantee outcomes.' Identifying this has been the product of a series of longitudinal studies and surveys on client outcomes, some in collaboration with academic partners.

To transition to more 'value-based health care', the TAC have set four organisational goals:

Outcomes	Provider Partnership and Enablement	Data and technology	Organisational
Client outcomes are embedded into end-to-end provider pricing and purchasing arrangements	The TAC supports providers to deliver safe, high quality, outcomes-focused care for clients.	The TAC collects and analyses high quality data, with supporting technology to improve the client and provider experience.	The TAC has the organisational foundations to enable successful transition to and support value-based provider pricing and purchasing arrangements.

After co-designing the approach with stakeholders, the goal is to test through a series of pilots with specific client cohorts, before scaling up.

Case study – Persistent pain

The current focus is on persistent pain, especially back pain. Three potential problems have been identified that currently lead to low-value care in persistent pain. These problems and corresponding solutions are summarised in the table below.

Table 10 – Examples of problems and corresponding solutions

Problem	Corresponding solutions
Poor risk profiling	Early identification and prevention: The goal is to use persistent pain risk screening tools and business processes to improve early identification. The electronic Pain Outcomes Collaboration (ePPOC) with Wollongong University to identify client cohorts and outcomes supports this work.
Limited consumer knowledge	Educating and empowering customers: The goal is provide consumers with enhanced information to increase self-management.
Lack of clear pathways for clients, especially those with persistent pain.	Evidence based programs and interventions: Especially in the area of back pain, there are established, evidence-based best practice clinical guidelines for management of back pain. The goal is to use a set of recommended care pathways to help improve health outcomes.

Taking an outcomes informed approach

The TAC is focussing on an outcomes informed approach. An outcomes informed approach works well based on the data available to TAC – outcomes are well recorded, but road accident injuries are less clearly categorizable. They consider three key outcome metrics: the cost to the scheme, the duration of the client on the scheme and the client experience. Looking at these metrics they can identify variations and particularly poorer outcomes. They can then work backwards to identify patterns that are associated with these poorer outcomes. The outcomes informed approach is also highly collaborative with providers. By measuring outcomes, and sharing this information to start conversations about improving client outcomes, the goal is drive behaviour change throughout the scheme.

Queensland WorkCover

Queensland WorkCover have invested in developing their analytical ability in order to make use of their extensive data. They have developed a series of sophisticated dashboards which enable interrogation of trends and outliers. The dashboards are multi-dimensional providing visibility into:

- Claim categorisations
- Services
- Costs
- Billing behaviour and provider trends
- Cost per service compared to peers
- Outcomes compared to peers (for example, return to work).

The tool also handles details like assigning a present day value to historical costs, so that comparisons are straight forward. These tools are used by specialist staff with subject matter expertise to identify patterns and outliers. These can then be drilled down into and classified. Some notable features Queensland Workcover have discussed include:

- The ability to differentiate between one-off and recurrent patterns is important in spending time effectively
- The ability to benchmark providers and compare patterns by providers has highlighted interesting patterns in care pathways and outcomes

- The link to outcomes enables monitoring of outcomes for new care pathways, this has allowed them to present early findings on pathways for broader adoption.

Importantly they have operationalised this analytics tool so that they can effect change based on their observations. Some examples of this are provided in Table 11 below.

Table 11 – Examples of analytics leading to policy change

Area of investigation	How they affected change
Increasing use of spinal cord stimulators: ▪ How many have we paid? ▪ What are the claim outcomes? ▪ What is the cost per claim?	Presenting to the Neuromodulation Society on emerging outcomes. This can then drive research into understanding the mechanisms and developing guidelines.
Increasing use of medial branch blocks: ▪ Low-cost procedure ▪ Increasing usage causing increasing costs ▪ Growth concentrated among certain providers.	Presenting to the Faculty of Pain Medicine on emerging positive outcomes to drive and research and guideline development.
Monitoring recommended imaging pathways developed by The Royal Australian and New Zealand College of Radiologists: ▪ For example, ultrasound of the lower back should not be performed	Where providers do not follow recommended pathways and guidelines they can initiate a conversation, followed by a warning and escalation to refusal of further claims.

NSW State Insurance Regulatory Authority

In late 2018, performance monitoring activity in New South Wales highlighted escalating healthcare costs, particularly in the New South Wales workers compensation scheme, without a corresponding improvement in the return to work rate. This led the New South Wales State Insurance Regulatory Authority (SIRA) to commence a fundamental review of healthcare across a variety of personal injury schemes. SIRA has responsibility for regulating the NSW compulsory third party scheme and workers compensation scheme. This includes icare which is the primary insurer in the NSW workers compensation system.

As part of this review, SIRA has commissioned research from the Centre for Health Policy at the University of Melbourne School of Population and Global Health to determine the extent of low-value care in the relevant schemes.

Preliminary reviews for this research include:

- Occupational noise-induced hearing loss and audiometry
- Better pain management approaches
- Best practice opioids management
- Best practice vocational rehabilitation programs.

As well as providing information on the current extent of low-value care, the proposed research will inform evidence-based best practice for future treatment, in order to help avoid low-value healthcare.

Health outcomes framework

Preliminary analysis and feedback from SIRA's review highlighted the importance of monitoring the health outcomes of patients in order to shift the focus to value based care. To this end, SIRA has started developing an outcomes framework for Value-Based Healthcare. This framework provides a guide for developing metrics that track progress towards delivering value-based healthcare. The long-term objective is to:

- Shift from volume to value-based healthcare
- Ensure that ongoing research and evaluation is used to inform continuous improvement.

A wide range of metrics have been developed, which are placed in the following six domains:

- Physical and mental health
- Wellbeing
- Injured person experience and accessibility
- Safety and quality of healthcare
- Provider expertise, delivery and experience
- Effectiveness and efficiency of healthcare.

Some examples²¹ of indicators proposed for domain (4) – Safety and quality of healthcare include:

- Distribution of imaging performed
- % claims with identified low value procedures or services (e.g. 'clean out' knee arthroscopy, high volume of physiotherapy sessions, imaging for lower back pain)
- % of claims with unwarranted variation from clinical guidelines/evidence-based practice
- % of claims with medically unnecessary incapacity durations
- % claims passing audit of biopsychosocial information collection.

Together with the University of Melbourne research program into current extent of low-value care, the health outcomes framework will be used for the following purposes:

Application	How the framework achieves this
Service design	Guide targeted and collaborative service design
Assessment and case planning	Promote risk stratification and segmentation as well as target case planning
Service delivery	Support healthcare practitioners to adopt outcomes-focused approaches to service delivery
Monitoring, research, evaluation and experience investigation	Promote consistency of measurement and evaluation of healthcare services
Performance management	Support other regulatory tools as a basis for outcomes-focused supervision
Continuous improvement	Foster innovation, learning and continuous improvement

²¹ A full list of the proposed metrics is available on the SIRA website <https://www.sira.nsw.gov.au/news/framework-to-measure-value-based-care>.

Our findings

- There is evidence of low-value care imaging services found by other schemes
- There is increasing interest by a variety of schemes in monitoring and reducing low-value care.
- Other schemes have approached this issue by:
 - Commissioning research into current prevalence and best practice treatment
 - Development of monitoring and data frameworks that benchmark referrers and providers and ensure adherence to quality standards for referring to imaging services

6 Key findings

We reviewed **ACC's high-tech imaging costs and approach to funding** and found:

- Volumes and associated costs of high-tech imaging have more than doubled over the past twelve years.
- Over calendar year 2022:
 - MRI represented 81.1% of costs, with two-thirds of this relating to imaging of knees, lumbar spine and shoulder. Focusing on fair pricing for these components may offer the most benefits.
 - CT represents 14.6% of costs, with a wider distribution across body parts than MRI.
- The growth in costs over the last decade has been driven by growth in volume of services. Of the 7.6% annual increase in cost over the twelve years to 2022, 6.6 percentage points can be attributed to growth in the volume of services, while 1 percentage point can be attributed to price increases.
- The current model relies on RVUs to set relativities in prices between modalities in HTI. There is one price for MRIs, one for MR Arthrogram, one for CT angiogram and three for CT scans. There is potential to increase the granularity, for example differentiating between MRI scans of different body parts. Medicare in Australia provides more granularity, to the order of +/- 10% variation around the average fee.
- Overall, ACC's indexation rates appear appropriate, although we cannot be definitive without a view on costs. The indexation is comparable with Medicare Australia's long-term indexation rates. We note that historically Medicare Australia has brought in extensive price freezes to control costs, as ACC has done recently.

We carried out **discussions with three injury schemes in Australia** (Queensland WorkCover, Transport Accident Commission and icare), as well performed a **review of fees paid by Medicare**, to understand their approach to pricing HTI. We found:

- The fee for service model used by ACC is consistent with all schemes we discussed with in Australia (Queensland WorkCover, Transport Accident Commission and icare), although some schemes allow providers to charge less (a maximum fee for service).
- These schemes all based their fees on the Medicare schedule, with a loading applied (1.2x – 1.8x). This reflects the natural lack of visibility into providers' costs as well as recognises Medicare fees are typically considered to not fully cover costs.
- The fees paid by ACC are slightly higher than most schemes, typically the difference is in the range \$50-\$150.
- For 2023, Medicare Australia will apply an annual indexation factor of 3.6%, which will increase all Australian fees to more closely meet the rising costs of imaging services. Future indexation factors will depend on increases in the underlying indices.
- While HTI fees were not a focus for most schemes, all the schemes we talked to expressed concerns about potential overuse of imaging and 'self-referring'. Low-value care, particularly lower back, was the biggest focus as a cost driver. Schemes have initiatives underway which aim to reduce low-value care.

Key results and recommendations

1. While we have found that the fees paid by ACC are generally higher than those of the Australian schemes, they are often quite close. With indexation of Medicare fees that most schemes peg their rates to recently restarting, and a pause in indexation of ACC's fees, the gap will reduce over time.
2. The RVU's used by ACC provide limited differentiation in pricing within each modality. We recommend adopting greater differentiation to improve the relationship between cost of service and the price paid.

3. The cost increases for high-tech imaging services over the last twelve years have been driven by large increases in service volumes. We recommend a program of work to:
 - a. Investigate changing patterns in imaging referrals
 - b. Benchmark referrers and providers to identify anomalous referring patterns, imaging double-up, or self-referring
 - c. Ensure accepted quality care recommendations are followed and high-quality, usable images are produced
 - d. Identify low-value imaging and work with health care quality monitoring agencies and medical and imaging provider peak bodies to provide education to reduce low-value care.



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